



## Complete Summary

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### GUIDELINE TITLE

Rib fractures.

### BIBLIOGRAPHIC SOURCE(S)

Rib fractures. Philadelphia (PA): Intracorp; 2005. Various p. [15 references]

### GUIDELINE STATUS

This is the current release of the guideline.

All Intracorp guidelines are reviewed annually and updated as necessary, but no less frequently than every 2 years. This guideline is effective from April 1, 2005 to April 1, 2007.

### \*\* REGULATORY ALERT \*\*

### FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

On April 7, 2005, after concluding that the overall risk versus benefit profile is unfavorable, the FDA requested that Pfizer, Inc voluntarily withdraw Bextra (valdecoxib) from the market. The FDA also asked manufacturers of all marketed prescription nonsteroidal anti-inflammatory drugs (NSAIDs), including Celebrex (celecoxib), a COX-2 selective NSAID, to revise the labeling (package insert) for their products to include a boxed warning and a Medication Guide. Finally, FDA asked manufacturers of non-prescription (over the counter [OTC]) NSAIDs to revise their labeling to include more specific information about the potential gastrointestinal (GI) and cardiovascular (CV) risks, and information to assist consumers in the safe use of the drug. See the [FDA Web site](#) for more information.

Subsequently, on June 15, 2005, the FDA requested that sponsors of all non-steroidal anti-inflammatory drugs (NSAID) make labeling changes to their products. FDA recommended proposed labeling for both the prescription and over-the-counter (OTC) NSAIDs and a medication guide for the entire class of prescription products. All sponsors of marketed prescription NSAIDs, including Celebrex (celecoxib), a COX-2 selective NSAID, have been asked to revise the labeling (package insert) for their products to include a boxed warning, highlighting the potential for increased risk of cardiovascular (CV) events and the well described, serious, potential life-threatening gastrointestinal (GI) bleeding associated with their use. FDA regulation 21CFR 208 requires a Medication Guide

to be provided with each prescription that is dispensed for products that FDA determines pose a serious and significant public health concern. See the [FDA Web site](#) for more information.

## COMPLETE SUMMARY CONTENT

\*\* REGULATORY ALERT \*\*

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

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## SCOPE

### DISEASE/CONDITION(S)

Rib fractures

### GUIDELINE CATEGORY

Diagnosis

Evaluation

Management

Treatment

### CLINICAL SPECIALTY

Emergency Medicine

Family Practice

Internal Medicine

Surgery

### INTENDED USERS

Allied Health Personnel

Health Care Providers

Health Plans

Hospitals

Managed Care Organizations

Utilization Management

### GUIDELINE OBJECTIVE(S)

To present recommendations for the diagnosis, treatment, and management of rib fractures that will assist medical management leaders to make appropriate benefit coverage determinations

## TARGET POPULATION

Individuals with rib fractures

Note: These guidelines are not intended for use in patients with rib fractures associated with multiple trauma, spinal, and/or head trauma.

## INTERVENTIONS AND PRACTICES CONSIDERED

### Diagnosis/Evaluation

1. Physical examination and assessment of signs and symptoms
2. Diagnostic tests:
  - X-rays
  - Pulmonary function test (PFT)

### Management/Treatment

1. Insertion of chest tube
2. Oxygen supplementation
3. Pain management (ice, non-steroidal anti-inflammatory drug [NSAID], analgesics, intercostal nerve block with bupivacaine, epidural analgesia)

Note: Guideline developers recommended avoidance of narcotic analgesia

4. Non-strenuous daily activities as tolerated
5. Deep breathing exercises
6. Rib belts, tape, or binders
7. No heavy work or athletic activity for at least 3 weeks
8. Referral to a specialist
9. Surgery in severe cases (multiple rib fractures or flail chest)

## MAJOR OUTCOMES CONSIDERED

Morbidity and mortality in patients with rib fractures

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)  
Hand-searches of Published Literature (Secondary Sources)  
Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Searches were performed of the following resources: reviews by independent medical technology assessment vendors (such as the Cochrane Library, HAYES); PubMed; MD Consult; the Centers for Disease Control and Prevention (CDC); the U.S. Food and Drug Administration (FDA); professional society position statements and recommended guidelines; peer reviewed medical and technology publications and journals; medical journals by specialty; National Library of Medicine; Agency for Healthcare Research and Quality; Centers for Medicare and Medicaid Services; and Federal and State Jurisdictional mandates.

#### NUMBER OF SOURCE DOCUMENTS

Not stated

#### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

#### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

#### METHODS USED TO ANALYZE THE EVIDENCE

Review

#### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

#### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

#### DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

A draft Clinical Resource Tool (CRT or guideline) is prepared by a primary researcher and presented to the Medical Technology Assessment Committee or the Intracorp Guideline Quality Committee, dependent upon guideline product type.

The Medical Technology Assessment Committee is the governing body for the assessment of emerging and evolving technology. This Committee is comprised of a Medical Technology Assessment Medical Director, the Benefit and Coverage Medical Director, CIGNA Pharmacy, physicians from across the enterprise, the Clinical Resource Unit staff, Legal Department, Operations, and Quality. The Intracorp Guideline Quality Committee is similarly staffed by Senior and Associate Disability Medical Directors.

Revisions are suggested and considered. A vote is taken for acceptance or denial of the CRT.

#### RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

#### COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

#### METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups  
Internal Peer Review

#### DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

### RECOMMENDATIONS

#### MAJOR RECOMMENDATIONS

##### Diagnostic Confirmation

##### Subjective Findings

- History of chest wall trauma
- Report of severe coughing with onset of severe chest pain
- Localized pain of chest wall
- Pain exacerbated with inspiration or coughing
- Shortness of breath (SOB)

##### Objective Findings

- Localized tenderness over fracture site
- At costochondral junction, a step-off deformity may be palpated in fracture/dislocation here.
- Hematoma with displaced rib fracture and injury to intercostal vessel
- Rales on inspiration
- Crepitus
- Subcutaneous emphysema
- Ecchymosis and muscle spasm over rib(s) may be noted.
- Hemoptysis - expectoration of blood from the lungs, oral cavity, larynx, trachea, or bronchi
- Cyanosis
- Signs of flail chest

- Paradoxical chest wall excursion: during inspiration a segment of rib(s) is noted to be depressed, followed by bulging during expiration

### Diagnostic Tests

- X-rays to establish diagnosis and rule out complications (pneumothorax, hemothorax, flail chest, pulmonary contusion)
- Pulmonary function test (PFT)

### Differential Diagnosis

- Severe rib contusion (see the Intracorp guideline Blunt Chest Trauma/Chest Wall Contusion)
- Costochondral dislocation
- Costochondritis
- Muscle strain in the lower thoracic girdle
- Pneumothorax (see the Intracorp guideline Pneumothorax)
- Pleurisy

### Treatment

#### Treatment Options

- Insertion of chest tube to decompress pneumothorax or hemothorax if identified
- Oxygen supplementation to correct hypoxia may be indicated.
- Stable, non-displaced fractures that do not involve more than 2 segments:
  - Pain management
    - Ice, non-steroidal anti-inflammatory drug (NSAID), and analgesics
    - Occasionally, if a patient has severe pain, an intercostal nerve block with bupivacaine can be used and may be repeated several times.
    - Epidural analgesia is associated with reduced morbidity and mortality in the elderly with rib fractures: should be aggressively managed with hospitalization, and in conjunction with respiratory care
    - Narcotic analgesia should be avoided to reduce risk of respiratory depression.
- Continue NON-STRENUOUS daily activities as tolerated
- Deep breathing exercises should be emphasized to prevent atelectasis.
- Judicious use of rib belts, tape, or binders
  - Although these can decrease pain, they may also limit inspiratory and expiratory volumes.
  - Increases risk for subsequent atelectasis and pneumonia
- NO heavy work or athletic activity for at least 3 weeks
  - Added risk of a pneumothorax caused by a fractured rib segment penetrating the pleura
  - For athletes in contact sports, protective rib padding should be worn after 3 weeks.

- In severe cases (multiple rib fractures or flail chest is present), surgery may be indicated to stabilize fractures and prevent complications by optimizing respiratory mechanics.
- Note: State jurisdictional guidelines may supersede the recommendations of this guideline.

#### Duration of Medical Treatment

- Medical - Optimal: 7 day(s), Maximal: 45 day(s)
- Surgical - Optimal: 21 day(s), Maximal: 75 day(s)

Additional information regarding primary care visit schedules, referral options, and specialty care is provided in the original guideline document.

The original guideline document also provides a list of red flags that may affect disability duration, and return to work goals, including

- Non-displaced fracture, resolving pain
- After chest tube insertion for pneumothorax or hemothorax
- After hospitalization and surgery for flail chest

#### CLINICAL ALGORITHM(S)

None provided

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

### BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

#### POTENTIAL BENEFITS

##### General Potential Benefits

Appropriate diagnosis, treatment, and management of rib fractures to assist medical management leaders to make appropriate benefit coverage determinations

##### Specific Benefits

Epidural analgesia is associated with reduced morbidity and mortality in the elderly with rib fractures.

#### POTENTIAL HARMS

Judicious use of rib belts, tape, or binders can decrease pain, but may also limit inspiratory and expiratory volumes and increases risk for subsequent atelectasis and pneumonia.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Rib fractures. Philadelphia (PA): Intracorp; 2005. Various p. [15 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1997 (revised 2005)

### GUIDELINE DEVELOPER(S)

Intracorp - Public For Profit Organization

### SOURCE(S) OF FUNDING

Intracorp

### GUIDELINE COMMITTEE

CIGNA Clinical Resources Unit (CRU)  
Intracorp Disability Clinical Advisory Team (DCAT)



Medical Technology Assessment Committee (MTAC)  
Intracorp Guideline Quality Committee

#### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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#### GUIDELINE AVAILABILITY

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#### AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Policies and procedures. Medical Technology Assessment Committee Review Process. Philadelphia (PA): Intracorp; 2004. 4 p.
- Online guideline user trial. Register for Claims Toolbox access at [www.intracorp.com](http://www.intracorp.com).

Licensing information and pricing: Available from Intracorp, 1601 Chestnut Street, TL-09C, Philadelphia, PA 19192; e-mail: [lbowman@mail.intracorp.com](mailto:lbowman@mail.intracorp.com).

#### PATIENT RESOURCES

None available

#### NGC STATUS

This NGC summary was completed by ECRI on May 31, 2005. The information was verified by the guideline developer on June 7, 2005.

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